

Remarks

Reconsideration of this Application is respectfully requested.

Upon entry of the foregoing amendment, claims 172-213 are pending in the application. Claims 172, 198, 199, 201, 208, 210, 211, and 212 are independent claims. Claims 1-171 are canceled without prejudice to or disclaimer of the subject matter recited therein.

These changes are believed to introduce no new matter, and their entry is respectfully requested.

Based on the above amendment and the following remarks, Applicants respectfully request that the Examiner reconsider and withdraw all outstanding objections and rejections.

New Claims 172-213

New claims 172-213 are sought to be added in place of the previously pending claims so as to reduce the number of independent claims. Many of the independent claims arose out of multiple indications of allowable claims, corresponding amendments, and subsequent rejections in view of newly discovered references, as summarized below.

In the first Office Action, dated March 24, 2004, claims 1-4, 7-9, 14-16, 22, 25-27, 37, 43-53, 55, 58, 59, 63, and 64 were rejected under 35 U.S.C. § 102(e), as being anticipated by DeMarcken *et al.* (WO 00/46715). Claim 5 was rejected under 35 U.S.C. § 103(a) as being unpatentable over DeMarcken in view of a publication by Padmanabhan. Paragraph 6 of the Office Action stated that “claims 6, 10-13, 17-21, 23-24, 28-36, 38-42, 54,56-57, 60-62 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office Action and to include all of the limitations of the base claim and any intervening claims.”

An Amendment and Reply was submitted on July 23, 2004, including amendment to correct typographical errors and remarks with respect to DeMarcken and Padmanabhan.

In a non-final Office Action dated October 28, 2004, the previous rejections were substantially maintained, and a new rejection was issued under 35 U.S.C. § 101.

A telephonic Examiner Interview was conducted on December 21, 2004.

In an Amendment and Reply submitted April 28, 2005, amendments were made to overcome the rejection under 35 U.S.C. § 101, and remarks were provided with respect to DeMarcken and Padmanabhan.

In a Final Office Action dated July 14, 2005, the rejections under 35 U.S.C. §§ 101, 102, and 103, and the allowability of claims 6, 10-13, 17-21, 23-24, 28-36, 38-42, 54, 57, and 60-62, were maintained.

In an Amendment and Reply submitted January 17, 2006, with a Request for Continued Examination, claims 1-64 were sought to be cancelled and new claims 65-139 were sought to be added.

In a Restriction Requirement dated April 28, 2006, claims 65-139 were withdrawn from consideration as being directed to an invention that is independent and distinct from the previously examined claims.

In an Amendment and Reply submitted September 28, 2006, new claims 1-64 were reinstated, and new claims 140-171 were added in accordance with the prior indication that “claims 6, 10-13, 17-21, 23-24, 28-36, 38-42, 54, 57, and 60-62 would be allowable if rewritten ... to include all of the limitations of the base claim and any intervening claims.” (Final Office Action dated July 14, 2007, paragraph 8). Page 51 of the Amendment and Reply included a table cross-referencing the new claims to the allowable claims.

In a Non-Final Office Action dated December 7, 2006, all of the pending claims, 1-64 and 140-171 were rejected under 35 U.S.C. § 112, second paragraph, for indefiniteness. The Non-Final Office Action did not include any rejections under 35 U.S.C. § 102 or 35 U.S.C. § 103.

In an Amendment and Reply submitted February 5, 2007, amendments and remarks were presented to overcome the rejections under 35 U.S.C. § 112, second paragraph.

In a Non-Final Office Action dated April 12, 2007, claims 1-9, 14-16, 23-25, 37, 43-53, 55, 58-60, 140, 167-169 were rejected under 35 U.S.C. § 102(e) as being anticipated by DeMarcken, and claims 22 and 23 were rejected under 35 U.S.C. § 103(a) as being unpatentable over DeMarcken in view of newly cited references to Jafri and Ahlstrom, respectively. Claims 141-149, 152-164, 166, and 170 were identified as allowable, and claims 10-13, 17-21, 23-24, 28-36, 38-43, 54, 56, and 61 were objected to as being dependent upon a rejected base claim.

Applicants filed a timely Appeal Brief on October 22, 2007.

In a Non-Final Office Action dated March 17, 2008, prosecution was reopened by the Examiner, and claims 1-9, 14-16, 22-26, 37, 43-53, 55, 57-59, 63, 64, 140, 150, 151, 167, 168, were rejected under 35 U.S.C. § 103(a), as being unpatentable over DeMarcken in various combinations of six newly applied references (Hussey, Tock, Brezin, Sedlar, Dillon, Theriault, and Jafri) and Ahlstrom. Claims 141-149, 152-166, and 169-171 were identified as allowable, and claims 10-13, 17-21, 27-36, 38-42, 54, 56, and 60-62 were objected to as being dependent upon a rejected base claim.

In an Amendment and Reply submitted August 18, 2008, claims 1 was amended to recite the features of allowable claim 27 and intervening claim 26. Allowable claim 56 was amended to include features of claim 1 and intervening claims 3 and 55. Claims 2-55, 57-64, 140, 150, 151, 167, and 168 were cancelled. Thus, the remaining claims (1, 56, 141-149, 152-166, and 169-171), were in condition for allowance.

In the outstanding Office Action, the previously indicated allowability of claims 56, 145-149, 156-159, and 161-165 is withdrawn in view of new rejections under 35 U.S.C. § 103(s) over DeMarcken in various combinations of Hussey and six newly applied references (Lore, Sitaraman, Warwick, Jilk, Heidorn, and Tedesco). Claims 1, 141-144, 153-155, 160, 162-166, and 169-171 are identified as allowable.

The multiple indications of allowable dependent claims during prosecution of this application, the corresponding rewriting of allowable dependent claims into independent form, and subsequent rejections based on newly discovered references, has resulted in nineteen (19) independent claims pending in the application prior to this Amendment and Reply.

Applicants seek to reduce the number of independent claims by replacing the previously pending claims with new claims 172-213, which include eight (8) independent claims. Mappings between new claims 172-213 and subject matter recited in previously pending claims are provided in the table below. The table also identifies exemplary support in the specification.

New Claims	Subject Matter Recited of New Claim	See Previous Claims	Exemplary Specification Support
172*-197	Proactive query ordering based on age of cached data and time-to-departure	141**	Page 36, line 24, through page 42, line 25, page 37, line 15, and line 20
173	Prioritizing based on absence of cached data		Page 37, line 20
174	Threshold age of cached data	141**	Page 40, lines 6-20
175	Re-Ordering Records	141**	Page 40, lines 23-24
176	(See 173, 174, & 175)		
177	Ordering Factors include Market		Page 37, lines 9-14
178	Ordering Factors include origination/destination location		Page 37, lines 9-14, Page 37, line 29 to page 38, line 5
179	Ordering Factors include Holiday/Event		Page 37, line 29 to page 38, line 5
180	Ordering Factors include flight frequency		Original claim 44
181	Ordering Factors include frequency of change in availability		Original claim 45
182	Ordering Factors include Transportation Equipment Type		Page 38, line 7
183	Ordering Factors include Cached Availability Count		Page 37, lines 23-28
184	Encoding Ordering Factors into a Mathematical Function	56	Page 38, lines 12-16
185-194	Bucketing	141**	Page 38, line 17 to page 42, line 25
192-193	Multiple Sets of Buckets		Page 42, lines 19-25
195	Filtering queries for availability information for which corresponding fare information is unavailable	163	Page 36, line 28
196	Filtering queries for which users are not expected to request	165	Page 37, lines 5-6
197	Hashing of Records		Page 41, lines 18-30
198*	Proactive Query Ordering based on Cached Availability Count	166**	Page 37, lines 23-28
199*-200	Sub-Query Prioritization	170** 143** 144**	Page 18, line 1 to page 22, line 3
201*-207	Approximate Times	1**	Page 26, line 26 to page 29, line 3
208*	Sharing Availability Information Amongst Multiple Records	153**	Page 29, line 17 to page 31, line 6
209	Sharing Availability Information Between a Married Record and Another Record	154**	Page 31, line 7 to page 32, line 28
210*	Waiting a Pre-Determined Time	155**	Originally filed claim 31
211*	Monitoring	171**	Page 43, line 24, Page 44, lines 8-18
212*-213	Learning/Predicting	169**	Page 43, line 26, page 44, lines 24-26, original claims 59-60
* = Independent Claims		** = Claim Identified as Allowable in Outstanding Office Action	

Rejections Under 35 U.S.C. § 101

In paragraph 3 of the Office Action, claims 1, 56, 141-149, 152-166, and 169-171 are rejected under 35 U.S.C. § 101, as being directed to non-statutory subject matter. Applicants respectfully traverse.

Claims 1, 56, 141-149, 152-166, and 169-171 are sought to be cancelled herein, without prejudice to or disclaimer of the subject matter recited therein. The rejection is thus believed to be rendered moot. Reconsideration and withdrawal of the rejection are requested.

New independent claims 172, 198, 199, 201, 208, 210, 211, and 212, each recite performing features recited therein, "within a suitably programmed computer system." Support for this feature is found throughout the specification. New independent claims 172, 198, 199, 201, 208, 210, 211, and 212, and claims depending therefrom, are thus directed to statutory subject matter.

Rejections Under 35 U.S.C. § 103

In paragraphs 4 through 15 of the Office Action, claims 56, 145-149, 156-159, and 161-165, are rejected under 35 U.S.C. § 103(a), as being unpatentable over DeMarcken *et al.* (WO 00/46715), in view of one or more of the following:

Hussey (U.S. 5,826,269);
Lore *et al.* (U.S. 2002/0099691);
Tock (U.S. 2004/0064570);
Sitaraman *et al.* (U.S. 2006/0253896);
Warwick *et al.* (U.S. 205/0034135);
Jilk, Jr. (U.S. 2002/0010746);
Heidorn *et al.* (U.S. 6,098,081); and
Tedesco *et al.* (U.S. 6,349,295).

Lore, Sitaraman, Warwick, Jilk, Heidorn, and Tedesco are newly applied references.

Claims 56, 145-149, 156-159, and 161-165 are sought to be cancelled herein, without prejudice to or disclaimer of the subject matter recited therein. The rejection of claims 56, 145-149, 156-159, and 161-165 is thus believed to be rendered moot. Reconsideration and withdrawal of the rejection are requested.

Discussion of References with Respect to New Claims

For at least reasons provided below, new claims 172-213 are patentable over the references applied in the outstanding Office Action.

In the outstanding Office Action, DeMarcken is applied as teaching querying of airline information sources, caching received availability information, determining to provide requestors with real-time availability information or cached flight availability information, and providing requestors with availability information. (Office Action, paragraphs 5 and 6). DeMarcken is also applied as teaching proactive querying. (Office Action, paragraph 8).

Hussey is applied as teaching “prioritizing requestor queries in association with the given priority.” (Office Action, paragraph 5).

Tock is not discussed in the outstanding Office Action, except for a passage noting that, “DeMarcken et al., Hussey, and Tock do not disclose encoding multiple priorities into a mathematical function...” (Office Action, paragraph 5).

Lore is applied as teaching, “encoding multiple priorities into a mathematical function that assigns a combined priority value to units of cached flight availability information, and updating the cached flight availability information according to the associated combined priority values.” (Office Action, paragraph 5, page 4).

Sitaraman, Jilk, Heidorn, and Warwick, are applied as teaching features related to proxies. (Office Action, paragraph 6 (Sitaraman), paragraph 8 (Jilk), paragraph 9 (Heidorn), paragraph 10 (Heidorn, Sitaraman, Jilk), paragraph 11 (Heidorn, Warwick), and paragraph 12 (Heidorn, Sitaraman)).

Warwick is also applied as teaching, “receiving a request for information from [an] unsupported supplier and returning queries for information from the unsupported suppliers without querying an information source [0025].” (Office Action, paragraph 7).

Warwick is also applied as teaching filtering proactively generated queries (Office Action, paragraph 14), including proactively generated queries “related to flights on unsupported carriers” (Office Action, paragraph 14), and proactively generated queries directed to airline information sources that proxies cannot communicate with (Office Action, paragraph 11).

Tedesco is applied as teaching, “generating background threads that query sources automatically.” (Office Action, paragraph 13).

In the outstanding Office Action, Official Notice is taken regarding “filtering out queries related to airline flights for which fares are not available” (Office Action, paragraph 15), and “filtering out queries related to flights that users are not expected to request” (Office Action, paragraph 15).

Proactive Querying

New independent claim 172 and dependent claims 173-197 are directed to ordering of airline records based on a combination of factors including age of cached flight availability information associated with at least a portion of the records and time-to-departure, and querying for flight availability information corresponding to the records in accordance with the ordering.

DeMarcken teaches to *produce* routine direct queries. Specifically:

The database 70 can also be populated by routine direct queries even in the absence of queries made to the predictor so that, when a question is asked of the predictor, it is less likely that a direct query would have to be made. For example, the database 70 may be populated during off peak times for travel agents or may be simply populated with such routine queries when the system is not otherwise in use.

The database engine 80 populates the database 70. The engine 80 can *produce* queries of certain types depending upon the relative factors involved in any particular flight and/or airline. Such routine queries could be automatically *produced* by the database engine 80 for those markets and/or flights in which air travel is particularly heavy or during such periods of time where air travel between particular origins and destinations would be particularly heavy.

(DeMarcken, page 10, line 36, through page 11, line 16, *emphasis added*).

DeMarcken does not, however, teach or suggest *ordering* of the routine direct queries, and thus does not teach or suggest “*ordering* records of airline flights based on a combination of factors including age of cached flight availability information associated with at least a portion of the records and time-to-departure; and querying one or more airline information sources for flight availability information corresponding to the records in accordance with the ordering,” as recited in claim 172.

Hussey is directed to “a networked system for processing queries for a server in a distributed processing environment.” (Hussey, Abstract). Hussey teaches to process low priority queries during “a low-usage time (e.g., after business hours),” and to provide query results the following day by electronic mail. (Hussey, column 2, lines 1-41).

Hussey does not teach or suggest “ordering records of airline flights based on a combination of factors including age of cached flight availability information associated with at least a portion of the records and time-to-departure; and querying one or more airline information sources for flight availability information corresponding to the records in accordance with the ordering,” as recited in claim 172.

Tock is directed to a “system and method for enabling a client application to operate offline from a server.” (Tock, Title). Tock teaches a scheduler to receive requests from client applications, and to forward the requests to a server when a network connection is available. (Tock, paragraph [0055]).

Tock further teaches a synchronization entry for scheduled tasks, such as to synchronize a client-side cache with a server-side master database. (*See*, Tock, paragraph [0058]). In response to a synchronization entry, a server receives identifications (IDs) of records cached by a client application, compares the IDs to a master data base, and determines which of the corresponding records have been updated in, or deleted from the master database subsequent to the caching by the client application. The identified records may be updated in, or deleted from the client-side cache. (Tock, paragraph [0060]). Tock thus teaches to compare all cached record IDs to a master database to determine which cached records need to be updated or deleted. Tock does not teach or suggest ordering the cached record IDs based on a combination of factors, and querying the master database for information related to the cached record IDs in accordance with the ordering.

Tock teaches to prioritize between types of tasks, such as error recovery entries, entries waiting for network connection, and cache synchronization entries. (Tock, paragraph [0077]). Again, however, Tock does not teach or suggest ordering the cached record IDs based on a combination of factors, and querying the master database for information related to the cached record IDs in accordance with the ordering.

Lore teaches to prioritize *buckets* of data based on frequency of use and most recent use, and to move lower priority buckets from cache to temporary files. (*See*, Lore, Abstract, and paragraphs [0162] through [0167]). Lore does not teach or suggest “ordering *records* of airline flights based on a combination of factors including age of cached flight availability information associated with at least a portion of the records and time-to-departure; and querying one or more airline information sources for flight availability information corresponding to the records in accordance with the ordering,” as recited in claim 172.

Entry, examination, and allowance of claims 172-197 are requested.

Proactive Querying and Mathematical Function

Further regarding new claim 184, it recites:

encoding the combination of factors into a mathematical function that assigns a numerical priority value to each of the records.

Previously pending claim 56 recited features similar to claim 184. The outstanding Office Action asserts that Lore teaches these features. (Office Action, paragraph 5, page 4). Applicants respectfully traverse, as Lore teaches to prioritize *buckets* of data, not “*each of the records*,” as recited in claim 184. (See, Lore, Abstract, and paragraphs [0162] through [0167]).

Proactive Querying and Bucketing

Further regarding new claims 185 through 194, they are directed to ordering of flight records amongst and within buckets. New claim 194 is similar in scope to allowed claim 141.

With respect to previously pending claim 141, the outstanding Office Action concedes that:

The prior art of record, specifically DeMarcken et al., Jafri et al., Ahlstrom et al and Harris et al do not disclose or fairly teach:

ordering the proactive queries within buckets at least according to ages of previously cached information data associated with the proactive queries;

re-bucketing the proactive queries as their associated time-to departures change; and

selecting a bucket for processing according to the ordering of the buckets, and

processing proactive queries within the selected bucket, skipping proactive queries for which information is presently cached and the newer than a predetermined age.

(Office Action, paragraph 16, page 17).

It is respectfully submitted that none of the references applied in the outstanding Office Action, alone or in combination with one another, teach or suggest the combinations of features recited in any of new claims 185-194.

Proactive Querying and Filtering

Further regarding claim 195, it recites “filtering a record from the querying for which a corresponding fare is unavailable.”

Previously pending and rejected claim 163 recited similar features. The outstanding Office Action states that “it is old and well known in the art at the time of the invention to not return replies to a user when there is not information regarding that information available from the information source.” (Office Action, paragraph 15). Applicants respectfully traverse.

As recited in new claim 172, a query is performed for *flight availability information* corresponding to a flight record. As recited in claim 195, the record is filtered from the querying when a corresponding *fare* is unavailable for the flight record. In other words, the querying is performed for a first type of information (i.e., flight availability information), and the filtering is performed in response to unavailability of a second type of information (i.e., fare information). Applicants respectfully submit that such filtering, as recited in claim 195, is novel and non-obvious.

Further regarding claim 196, it recites “filtering a record from the querying for which requestors are not expected to request flight availability information.” Previously pending and rejected claim 165 recited a similar feature.

The outstanding Office Action “takes Official Notice that it is old and well known in the art at the time of the invention to filter out queries related to information that a user is not expected to request. For example, is known to update a query by most frequently used information. If the cache is updated for information that is most frequently used, the

least frequently used information (i.e., information that users are not expected to request) will not be updated.” (Office Action, paragraph 15). Applicants respectfully traverse.

The Office Action appears to describe a cache replacement algorithm to selectively overwrite less frequently used information with new information. Claim 196, however, is directed to proactively querying for information associated with records (i.e., flight availability information associated with flight records), wherein records are filtered from the querying for which users are not expected to request flight availability information. Applicants respectfully submit that filtering, as recited in claim 196, is unrelated to cache replacement algorithms, and is novel and non-obvious.

Proactive Querying and Available Seats

New independent claim 198 is directed to ordering proactive queries based at least in part on a cached flight availability count. New claim 198 is similar to allowed claim 166. Entry, examination, and allowance of new claim 198 are requested.

Sub-Query Prioritization

New independent claim 199 and dependent claim 200 are directed to prioritization of sub-queries. Previously pending and allowed claims 170, 143, and 144, also recited sub-query prioritization features. Entry, examination, and allowance of new claims 199 and 200 are requested.

Approximate Flight Times

New claims 201 through 207 are directed to approximated flight times. Previously pending and allowed claim 1 also recited approximated flight times. Examination and allowance of new claims 201 through 207 are requested.

Sharing Cached Availability Counts

New independent claim 208 is directed to sharing of a cached availability count between a plurality of flight records. Claim 208 is similar to previously pending and allowed claim 153. Entry, examination and allowance of new claim 208 are requested.

Dependent claim 209 is directed to sharing a cached availability count between a married flight record and another flight record. Claim 209 is similar to previously pending and allowed claim 154. Entry, examination and allowance of new claim 209 are requested.

Waiting Predetermined Time

New independent claim 210 is directed to searching cached information after waiting a predetermined time for a query response from an airline information source. Previously pending and allowed claim 155 recites similar features. Entry, examination and allowance of new claim 210 are requested.

Monitoring

New independent claim 211 is directed to monitoring of flight availability information traffic. Previously pending and allowed claim 171 recites similar features. Entry, examination, and allowance of new claim 211 are requested.

Learning

New independent claim 212 and dependent claim 213 are directed to learning relationships between historical values for one or more factors associated with flight availability information and generating a function according to the learned relationship to return predicted flight availability information. Previously pending and allowed claim 169 also recited learning features. Entry, examination and allowance of new claims 212 and 213 are requested.

Conclusion

All of the stated grounds of objection and rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore request that the Examiner reconsider and withdraw all presently outstanding objections and rejections.

Applicants believe that a full and complete reply has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Prompt and favorable consideration of this Amendment and Reply is respectfully requested.

Respectfully submitted,

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